

**Preventing
Musculoskeletal
Disorders in
Garment Workers:
Practical Solutions
and Obstacles**



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A Partnership

California Department of Health Services
Occupational Health Branch

University of California, San Francisco
Occupational Health Nursing Program

University of California, San Francisco/Berkeley
Ergonomics Program

Asian Immigrant Women Advocates
(AIWA)

The big picture....

•Worldwide Clothing Production Is a \$335 Billion Business

•11 Million Workers/75% Women (China:3.7 M. US 793k, Mexico 567k)

•Compared to 1960s, consumers are spending 50% less but buying twice as many garments (28.7 outerwear items per person in the US.)

• Labor Costs: US \$9hr, Mexico, \$1.25hr, China \$0.45hr

Who gets the money...

For a \$100 dress.....



➤Retailers
get \$50

➤Manufacturers
get \$12-\$16

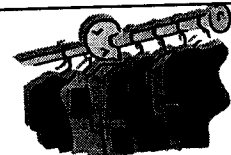
➤Contractor
gets \$9

➤Fabric costs
\$22

➤Garment Workers get \$2-\$6



Retailers



- ❖ Four companies sell 2/3 of the clothes sold in the US
- ❖ Wal-Mart sold more than \$117 billion in 1998
- ❖ The next biggest retailers (Sears, K-Mart, Target and Mervyns) together sold over \$100 billion

Retailers control the garment industry

More about retailers

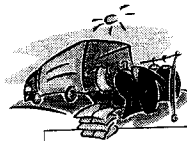
The two rules for retailers:

- Don't run out of items customers want
- Don't order items customers don't want.

• Big retailers carry between 800,000 and 2 million items in their stores.

• In 1987, retailers lost 25 billion dollars because of inventory errors

• The invention of the bar code transformed industry

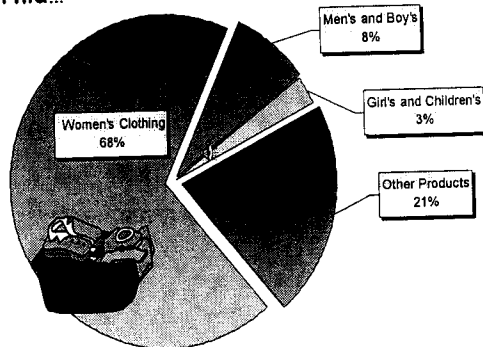


Manufacturers

- Manufacturers design, sell and deliver clothes to retail stores
- Usually they buy the fabric and contract with factories to cut and sew the garment
- They decide whether to use a factory in the US or overseas to make the garments

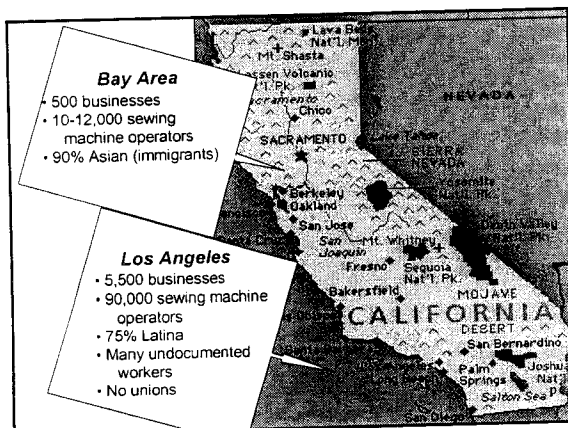
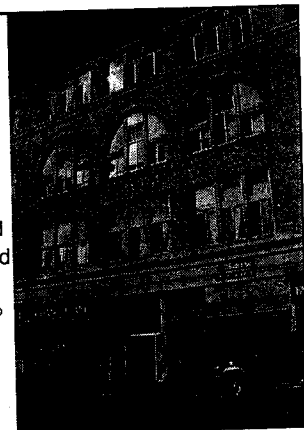
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What We Sew in California...



California's Garment Factories

- 6,000 factories in CA
- 45% employ less than 5 workers
- Most are immigrant-owned
- The majority are considered sweatshops
- In a 1996 TIPP study, 96% had health and safety violations (72% serious)
- Over 60% had minimum wage and hour violations



Description of Problem

- unsafe conditions
- long hours, no breaks
- no control over work
- no benefits
- many unlicensed shops
- cultural/language barriers
- fear of reporting injuries



MSDs in Garment Workers

- Sewing machine operators have significantly more MSD symptoms (Vilma 1982, Westgaard 1992)
- Persistent pain common among garment workers (Punnett 1985)
- Increased chronic health problems and permanent disability (Brisson 1989)

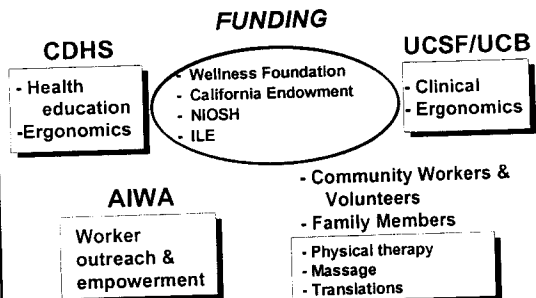
Ergonomic Risk Factors

- Poor posture and seating leads to pain and reduced work output (Nag 1992)
- Upper extremity MSD symptoms reduced with adjustable chairs and workstation changes (Li 1995, Herbert 1997)

Limitations of Existing Studies

- No studies in small contractor shops
- Few studies in United States
- No data on non-English speaking Asian workers

Multidisciplinary Project



Project Components

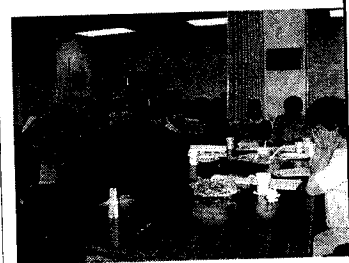
- (1) Free clinic in Oakland Chinatown -
- clinical examinations
 - physical therapy/massage
 - ergonomics/exercise classes

- (2) Work site ergonomic evaluation and intervention project



Goals of clinic

- provide service
- collect data on type and extent of MSDs in this population (questionnaire, focus groups)
- collect risk factor information to aid ergonomic project



Ergonomic Project - Goals

- identify risk factors for MSDs at small sewing shops
- perform detailed task analysis
- develop effective and cost-effective ergonomic interventions for sewing factories
- develop culturally sensitive and worker-friendly educational materials

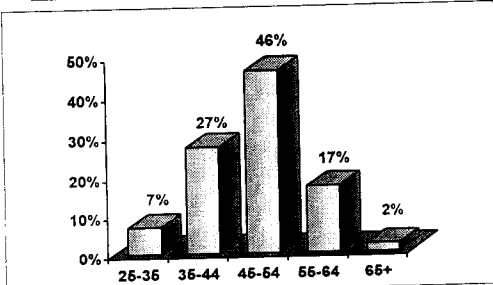


Ergonomic Project - Methods

- laboratory testing of proposed interventions
- introduce interventions at 3 "model" shops
- compare symptom severity and ergonomic measurements at "model" shops versus control shops
 - disseminate before/after work site surveys
 - videotaping, checklist, workstation measurements
 - employer/employee interviews

Age Distribution

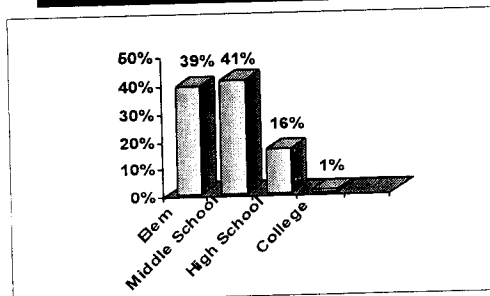
(n=100)



✓ Mean age = 48.7 years

Level of Education

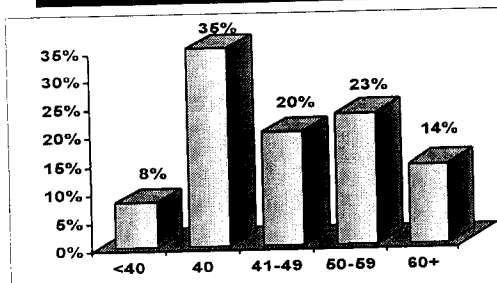
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- ✓ 80% less than middle school
- ✓ 95% Cantonese speaking

Hours Worked per Week

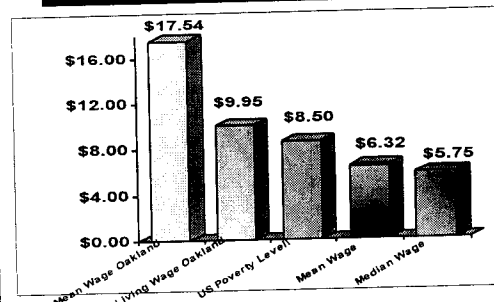
(n=100)



- ✓ Mean hours/week = 48 hours
- ✓ Mean years in industry = 13 years

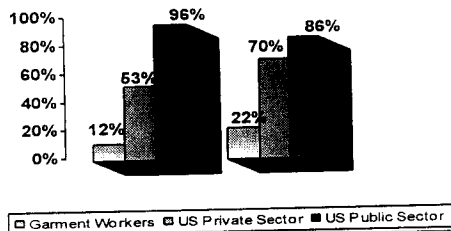
Garment Worker Wages

(n=100)



- ✓ Garment workers wages 75% US poverty level

Sick Leave and Health Insurance (n=100)



✓ Relatively few have benefits
✓ 11% have MediCal

Health Care Access

- 57% have seen HCP for WRMSD
- Most go to community clinics
- Most common barriers to care are language (50%) and cost (one-third)
- Only 7% have filed workers' compensation claim

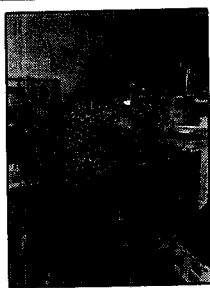
Primary Diagnoses (184 diagnoses for 99 patients)

Diagnosis	Number (%)
Sprains/strains	144 (78)
Back	48 (26)
Neck	33 (18)
Shoulder	23 (13)
Carpal tunnel	7 (4)
Other nerve	9 (5)
Tenosynovitis	18 (10)
Other	8 (4)
Totals	184 (100)

Treatment Methods

- NSAIDs
- Splints
- Injections
- Referral to limited PT and ergonomic classes
- Only one work comp claim filed

Risk Factors



Sustained neck and trunk flexion

Repetitive Shoulder Abduction



Risk Factors



Wrist Deviations

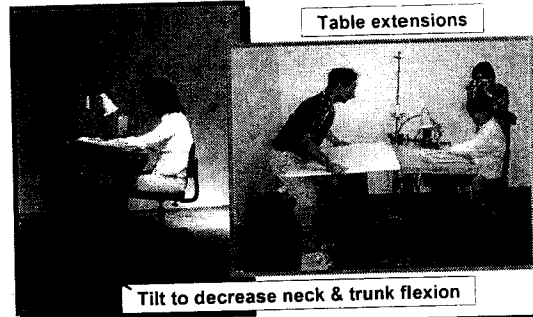
Pinching of Fingers

Lumbar Motion Monitor



Interventions and Laboratory Testing

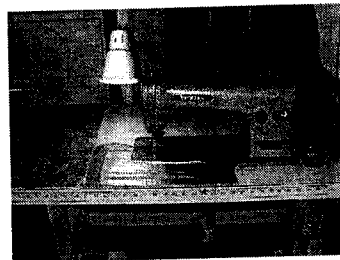
Table extensions



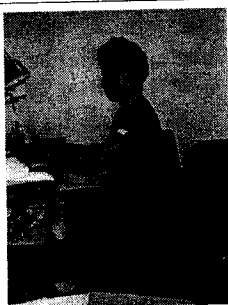
Tilting Table



Tilting Needle



Straight Back Chair



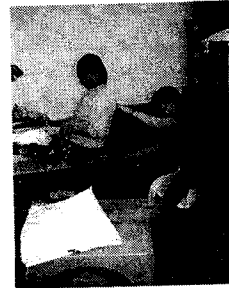
Intervention Results at 3 Shops

- significant reduction in MSD symptoms in employees
- employer satisfaction with feasible interventions (\$250/workstation)
- productivity analyses inconclusive

Successes

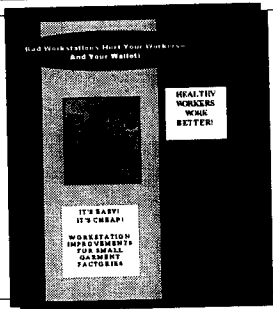
- Patient and employer recruitment
- Integrated stretching and ergonomics curriculum
- AIWA Ergonomics Committee: *worker-to worker outreach, train-the-trainer program*
- Participation in ergonomics "laboratory"

Participatory Model Worker Helping Worker



Outreach and education

- Employer booklet to implement changes
- Worker training videotape



Limitations

- Recruitment bias
- Uninsured/underinsured population limited care
- Limited work site follow-up
- Few willing to file work comp claims

Barriers to Treatment and Prevention

- "Ergonomics" is a foreign word
- "Work-relatedness" not understood
- Cultural beliefs about medication and rx
- Community clinic not willing to assist
- Fear of change
 - job loss/reprisal
 - pain part of job

Future Steps: Ergonomic improvements

- Initiate NIOSH-funded study in Los Angeles garment industry (n=400)
- Evaluate effectiveness of intervention in reducing MSDs
- Disseminate recommendations to employers and employees

Future Steps – Treatment of MSDs

- **Expand access to occupational health services**
- **Improve occupational health at primary care level**
- **Increase tracking of occupational injuries/illnesses among low wage/immigrant populations**